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Loris Stola

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EXAMINER

SARWAR, BABAR

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,370	Applicant(s) STOLA ET AL.	
	Examiner BABAR SARWAR	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed **09/23/2009** have been fully considered but they are not persuasive.
2. **Claims 1-25** had been previously cancelled.
3. **Claim 26** has been amended.
4. **Claims 26-50** are currently pending.

Applicant argued about the features "wherein computing the cell coverage comprises: dividing the region around said radio base station into a number of first areas... [and] dividing at least some of said first areas into a number of second areas."; and "for each first area, computing a first quantity indicative of the coverage within the first area as a function of data describing an environment within the first areas along a propagation path of a radioelectric signal radiating out from said radio base station and passing through said first area... [and] for at least some of said second areas, computing respective second quantities indicative of the cell coverage within said second areas, each second quantity being computed for the respective second area as a function of at least the first quantity computed for the first area containing said second area and of data describing the environment within said second area and within at least some further second areas within said first area and arranged upstream said second area along a radioelectric signal propagation path passing through said second area" and "at least the first quantity computed for the first area containing said second area"; and "data describing the environment within said second area and within at least some

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further second areas within said first area and arranged upstream said second area...”

read over Bernardin in view of Olof as follows;

Bernardin discloses a robust method for determining the boundaries of cells and the associated reliability of the RF coverage within these boundaries. The invention accurately determines the average range from the base station to the cell edge from RF signal strength measurements with a linear regression approach. The accuracy of this estimate is quantified both as a range uncertainty (e.g. ± 100 meters) and as cell coverage reliability (i.e. area/edge) through 1) simulation, 2) analysis of real data, and 3) theoretical analysis. It is shown that if the estimate of the cell radius meets the desired accuracy, then the corresponding estimates of coverage reliability (both area and edge) are more than sufficiently accurate. It is recommended that radio survey analyses incorporate this test as part of the coverage validation process. Bernardin's object of the invention is to determine the number of signal strength measurements needed to accurately estimate the cell radius R from the base station to the cell edge for both a given cell contour and cell area reliability. A further object of the invention is to estimate the coverage reliability of a cell with a finite number of signal strength measurements. A still further object of the invention is to minimize the area from which samples are taken in estimating cell radius. Bernardin further discloses that the areas are divided into the first areas, and the second areas i.e., the cell coverage in **Fig. 1a-b**. Therefore, Bernardin discloses that the reliability is computed by the propagation method. He further discloses that the areas within the cell edge have greater reliability. He also discloses the fade margin which included measurements and the cell reliability is based

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on received points within the large area i.e., cell radius as disclosed in **Fig. 1 a-b and Col. 4:51-52, as well as Col.4:58-63**. Thus Bernardin shows the above mentioned claimed limitations.

In regards to the applicant arguments concerning combination of the references, both of the references are from the same field, i.e., communication system and concerned analogues topics. Therefore, the examiner contends that the references would be combinable to one of skilled in the art. Concerning the applicant's arguments regarding motivation to combine the references, the motivation to combine was shown in the secondary reference. Therefore, the argued limitations read upon the cited references or are written broad such that they read upon the references.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 26-30, 44-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernardin et al. (US 6,173,185 B1), hereinafter referenced as Bernard.

Consider **claim 26**, Bernard discloses a method for planning a radio communications network (**Abstract, where Bernard discloses determining the boundaries of cells and the associated reliability of the RF coverage within these boundaries**). Bernard discloses that computing cell coverage, to indicate a region around a radio base station where a radio electric signal radiating out from the radio

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base station copes with given requirements (**Abstract, where Bernard discloses the cell coverage reliability**); wherein computing the cell coverage comprises: dividing the region around said radio base station into a number of first areas (**Figs.1a-b, where Bernard discloses first areas i.e. cell edge**); for each first area, computing a first quantity indicative of the coverage within the first area as a function of data describing an environment within first areas along a propagation path of a radio electric signal radiating out from said radio base station and passing through said first area (**Fig. 1b, where Bernard discloses reliability values computed by propagation method**); dividing at least some of said first areas into a number of second areas; and for at least some of said second areas, computing respective second quantities indicative of the cell coverage within said second areas (**Fig. 1b, where Bernard discloses areas within cell edge with greater reliability**), each second quantity being computed for the respective second area as a function of at least the first quantity computed for the first area containing said second area and of data describing the environment within said second area and within at least some further second areas within said first area and arranged upstream said second area along a radio electric signal propagation path passing through said second area (**Col. 4:24-26, where Bernard discloses fade margin, Col. 4:51-52, where Bernard discloses that the fading margin included in the measurements, Col. 4:58-63, where Bernard discloses that the cell reliability is based on received points within large area i.e. cell radius**).

Consider **claim 27**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein each second quantity is

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computed for the respective second area also as a function of data describing the environment within some further second areas arranged just outside the first area containing said second area and upstream said second area along said radio electric signal propagation path (**Fig. 1b, where Bernard discloses fade margins and area reliability**).

Consider **claim 28**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein each second quantity is computed for the respective second area also as a function of the first quantities computed for first areas surrounding the first area containing said second area (**Fig. 1b, where Bernard discloses cell coverage area reliability**).

Consider **claim 29**, Bernard discloses everything claimed as implemented above (see claim 28). In addition, Bernard discloses that wherein in the computation of a second quantity for a respective second area, the first quantities computed for the first areas surrounding the first area containing said second area are each weighted by using a respective weight which is inversely proportional to the distance between said second area and the corresponding first area (**Col. 4:24-26, where Bernard discloses fade margin**).

Consider **claim 30**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein said second quantities are computed for second areas empty of buildings (**Col. 1 : 62-67**).

Consider **claim 44**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein said data describing the

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environment within a first area include ground altitude with respect to the sea level, average building height, percentage of the first area occupied by buildings, and vegetation typology (**Fig. 4, where Bernard discloses geographical view of cell radius**).

Consider **claim 45**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein said data describing the environment within a second area include ground altitude with respect to the sea level and building height with respect to the ground level (**Fig. 4, where Bernard discloses fade margin and thresholds**).

Consider **claim 46**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein a second quantity for a second area occupied by a building is computed as a function of second quantities computed for second areas surrounding the second area occupied by the building (**Col. 4:51-52, where Bernard discloses that the fading margin included in the measurements**).

Consider **claim 47**, Bernard discloses everything claimed as implemented above (see claim 46). In addition, Bernard discloses that wherein a second quantity for a second area occupied by a building is computed as a weighted average of second quantities computed for second areas surrounding the second area occupied by the building (**Fig. 1b, where Bernard discloses cell coverage area reliability**).

Consider **claim 48**, Bernard discloses everything claimed as implemented above (see claim 47). In addition, Bernard discloses that wherein said second quantities

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computed for second areas surrounding the second area occupied by the building are weighted by using respective weights which are inversely proportional to the squared distances between the second area occupied by the building and the second areas surrounding the second area occupied by the building (**Col. 4:24-26, where Bernard discloses fade margin**).

Consider **claims 49**, Bernard discloses everything claimed as implemented above (see claim 26). In addition, Bernard discloses that wherein a processing system capable of being programmed to implement the method according to claim 26 (**Fig. 5, where Bernard discloses computer system to implement the method**).

Claim 50, as analyzed with respect to the limitations as discussed in claim 49.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernard in view of Olofsson (US 6,047,238), hereinafter referenced as Olof.

Consider **claim 31**, Bernard discloses everything claimed as implemented above (see claim 26). Bernard does not explicitly disclose that wherein computing a second quantity for a respective second area comprises: arranging a number of virtual radio electric signal sources outside the first area containing said second area; and computing said second quantity as a function of the point strength of a radio electric

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signal radiating out from at least one of said virtual radio electric signal sources and having a propagation path passing through said second area. Olof discloses that wherein computing a second quantity for a respective second area comprises: arranging a number of virtual radio electric signal sources outside the first area containing said second area **(Fig. 1, where Olof discloses generation of multiple of path profiles)**; and computing said second quantity as a function of the point strength of a radio electric signal radiating out from at least one of said virtual radio electric signal sources and having a propagation path passing through said second area **(Abstract, Fig. 5, where Olof discloses method of generating primary and adjacent paths and comparing them and outputting resulting path profile)**. Therefore it would have been obvious to one of ordinary skills in the art at the time the invention was made to modify Bernard with the teachings of Olof so as to improve the topographical data as discussed on **Col. 1:40-41**.

Consider **claim 32**, the combination teaches everything claimed as implemented above (see claim 31). In addition, Olof discloses that wherein the propagation path of the radio electric signal radiating out from said virtual radio electric signal source is the prolongation of a theoretical line linking said radio base station and said virtual radio electric signal source **(Fig. 1, where Olof discloses primary paths and adjacent paths)**.

Consider **claim 33**, the combination teaches everything claimed as implemented above (see claim 31). In addition, Olof discloses that wherein that wherein said virtual radio electric signal sources are arranged side by side along a line **(Fig. 1, where Olof**

discloses primary paths and adjacent paths arranged side by side).

Consider **claim 34**, the combination teaches everything claimed as implemented above (see claim 33). In addition, Olof discloses that wherein said virtual radio electric signal sources are equispatially arranged side by side along said line **(Fig. 1, where Olof discloses primary paths and adjacent paths arranged side by side).**

Consider **claim 35**, the combination teaches everything claimed as implemented above (see claim 33). In addition, Olof discloses that wherein said second areas have a polygonal shape, and wherein the distance between two adjacent virtual radio electric signal sources along said line is correlated to a side of said second areas **(Fig. 4, where Olof discloses primary and secondary paths and adjacent obstructions).**

Consider **claim 36**, the combination teaches everything claimed as implemented above (see claim 33). In addition, Olof discloses that wherein said line is a curved line **(Fig. 4).**

Consider **claim 37**, the combination teaches everything claimed as implemented above (see claim 36). In addition, Olof discloses that wherein said curved line is a circumference arc having center in said radio base station **(Fig. 4).**

Consider **claim 38**, the combination teaches everything claimed as implemented above (see claim 37). In addition, Olof discloses that wherein said circumference arc has radius equal to the difference between the distance between said radio base station and the center of the first area containing said second area and the distance between the center of said first area and said circumference arc **(Fig. 4).**

Consider **claim 39**, the combination teaches everything claimed as implemented

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above (see claim 38). In addition, Olof discloses that wherein said first areas have a square shape, and wherein the distance between the centers of said first area and said circumference arc is correlated to the diagonal of said first area (**Fig. 4**).

Consider **claim 40**, the combination teaches everything claimed as implemented above (see claim 37). In addition, Olof discloses that wherein ends of said circumference arc lie on theoretical lines which link said radio base station and corners of the first area containing said second area and which correspond to minimum and maximum azimuth angles of said first area with respect to said radio base station (**Fig. 4, where Olof discloses cell coverage**).

Consider **claim 41**, the combination teaches everything claimed as implemented above (see claim 31). In addition, Olof discloses that wherein the height of each virtual radio electric signal source is substantially equal to the sum of the ground altitude with respect to the sea level and the building height within the first area containing said virtual radio electric signal source (**Fig. 4**).

Consider **claim 42**, the combination teaches everything claimed as implemented above (see claim 31). In addition, Olof discloses that wherein said virtual radio electric signal sources radiate a reference power (**Fig. 1, where Olof discloses generation of paths**).

Consider **claim 43**, the combination teaches everything claimed as implemented above (see claim 31). In addition, Olof discloses that wherein the power radiated by said virtual radio electric signal sources is uncorrelated with the power radiated by said radio base station (**Fig. 1**).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BABAR SARWAR whose telephone number is (571)270-5584. The examiner can normally be reached on MONDAY TO FRIDAY 09:00 A.M -05:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NICK CORSARO can be reached on (571)272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BABAR SARWAR/
Examiner, Art Unit 2617

/BS/

/NICK CORSARO/
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